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ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/O 4/2
17901A HONEST JOHN, MISSILE NUMBERS 559, 855, AND 634, ROUND NU--ETC(U)
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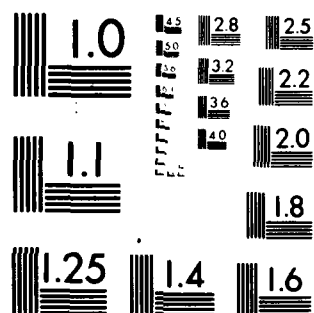
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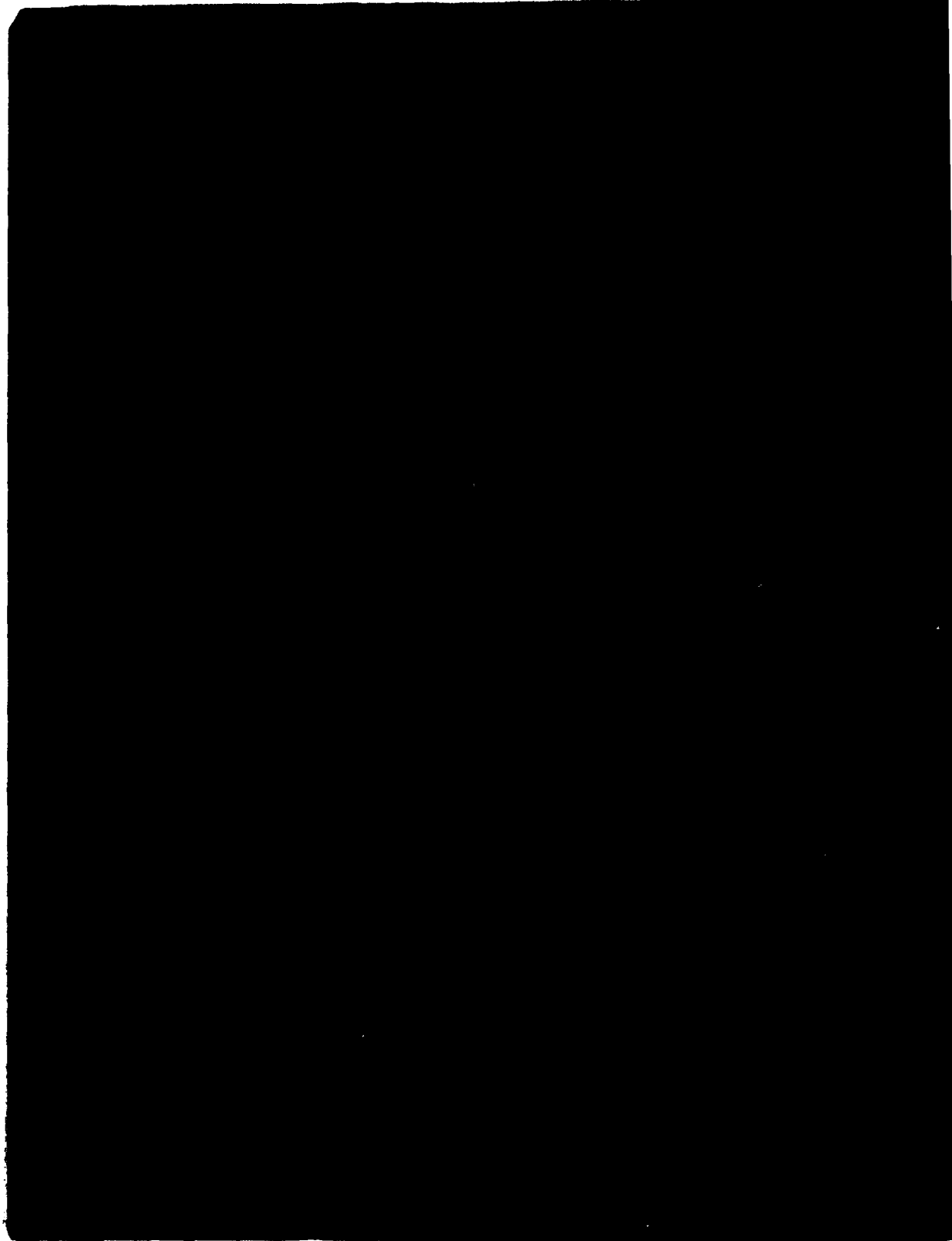
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INTRODUCTION

17901A HONEST JOHN , Missile Numbers 559, 855 and 634 ,
Round Numbers 667ASL, 668ASL and 669ASL , were launched from LC-33 ,
White Sands Missile Range (WSMR), New Mexico, at 1005, 1035 and 1235 MDT ,
on 29 May 1980 . The schedule launch times were 1005, 1030 and
1230 MDT .

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature ($^{\circ}\text{C}$), relative humidity, dew point ($^{\circ}\text{C}$), density (gm/m^3), Wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

(1) Low level wind data were obtained from RAPTS T-9 pibal observation at:

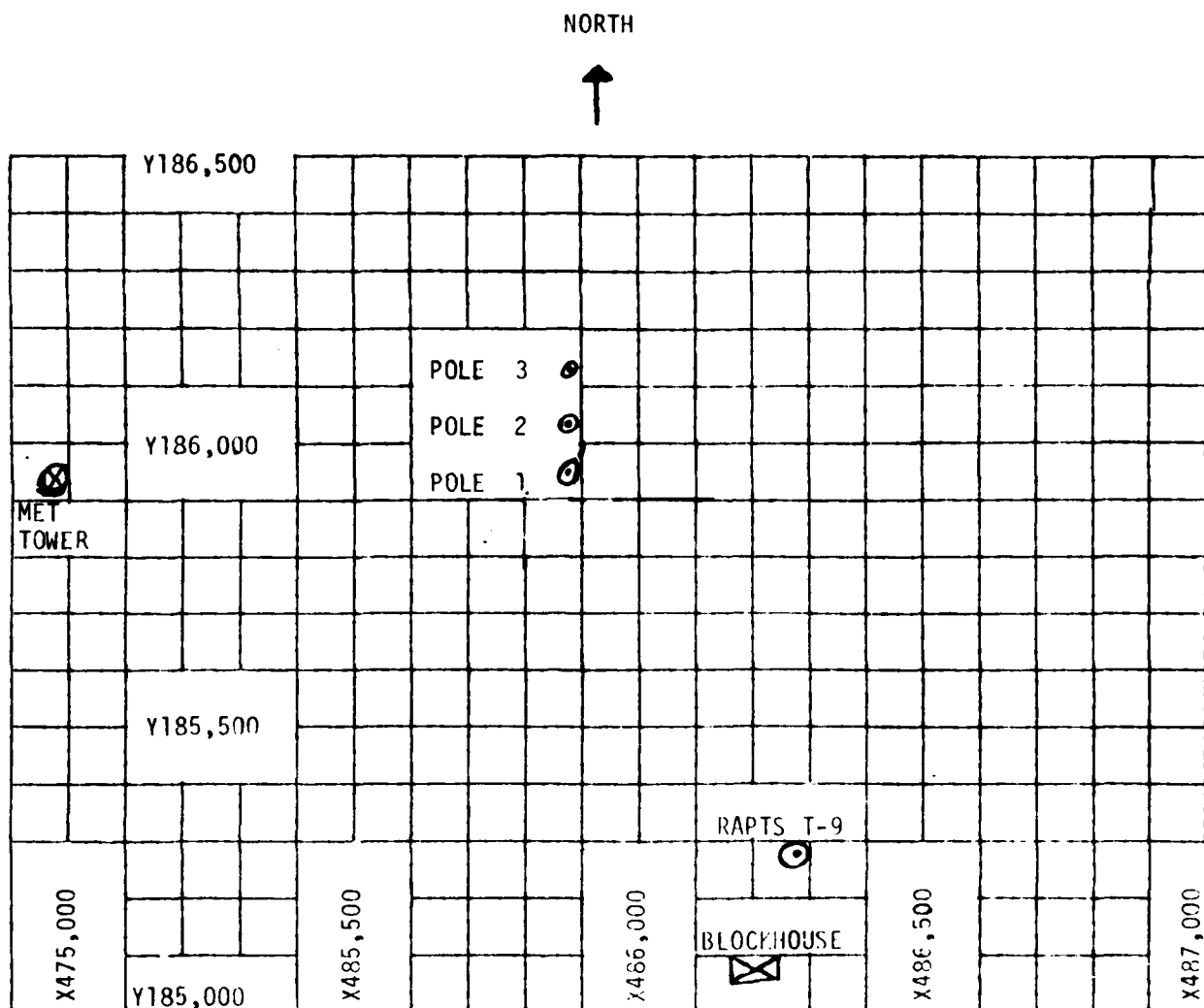
SITE AND ALTITUDE

LC-33	960m	1005 MDT
LC-33	4050m	1035 MDT
LC-33	3240m	1235 MDT

(2) Air structure data (rawinsonde) were collected at the following Met Sites. Data were collected from surface to 31,000 feet in 500-foot increments.

SITE AND TIME

WSD	0930 MDT
WSD	1235 MDT



1. MET TOWER - 4 Bendix Model T-20 Anemometers at 12 ft, 62 ft, 102 ft, and 202 ft with E/A recorders.
2. POLE ANEMOMETER - Bendix Model T-120 with E/A recorders.
 - (a) Pole #1 - 38.7 ft.
 - (b) Pole #2 - 53.0 ft.
 - (c) Pole #3 - 83.6 ft.
3. RAPTS T-9 Radar Automatic Pilot-Balloon Tracking System T-9 Radar.

TABLE 1. Surface Observations Taken at 1005 MDT,
29 May 1980, at LC-33, 17901A HONEST JOHN,
Missile Number 559, Round Number 667ASL.

ELEVATION	3986.67	FT/MSL
PRESSURE	878.2	MBS
TEMPERATURE	26.4	°C
RELATIVE HUMIDITY	14	%
DEW POINT	- 3.2	°C
DENSITY	1018	GM/M ³
WIND SPEED	10	KTS
WIND DIRECTION	270	DEGREES
CLOUD COVER	1	Ac

TABLE 2.

LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	280	22	-30	288	17	-30	272	14
-20	277	20	-20	288	12	-20	271	11
-10	274	18	-10	290	10	-10	270	10
0.0	261	17	0.0	283	13	0.0	255	11
+10	276	17	+10	283	15	+10	265	12

TABLE 3.

LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	260	15	-30	282	20
-20	270	15	-20	265	15
-10	268	10	-10	282	15
0.0	262	10	0.0	278	15
+10	272	11	+10	273	15

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	264	20	-30	261	23
-20	275	18	-20	259	19
-10	274	18	-10	270	18
0.0	269	17	0.0	268	18
+10	265	16	+10	271	18

PILOT BALLOON MEASURED WIND DATA

TABLE 4.

RELEASED FROM LC-33 DATE 29 May 1980 TIME 1005 MDT

COORDINATES (WSTM) X= 486,296.83 Y= 185,251.85 H= 3986.67

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH

HEIGHTS ARE METERS AGL X OR FEET AGL .

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
sfc	270	10
30	274	13
60	277	16
90	281	18
120	284	21
150	283	21
180	281	21
210	274	21
240	277	20
270	275	19
300	272	17
330	269	16
360	266	14
390	255	13
420	244	11
450	233	09
280	222	07
510	224	07
540	226	06
570	228	06
600	224	06
630	228	06
660	227	06
690	226	06
720	225	06
750	225	06
780	225	06
810	225	06
840	225	05
870	223	07
900	221	08

[illegible][illegible]

TABLE 5. Surface Observations Taken at 1035 MDT,
29 May 1980, at LC-33, 17901A HONEST JOHN,
Missile Number 855, Round Number 668ASL.

ELEVATION	3986.67	FT/MSL
PRESSURE	878.2	MBS
TEMPERATURE	26.7	°C
RELATIVE HUMIDITY	14	%
DEW POINT	- 3.1	°C
DENSITY	1017	GM/M ³
WIND SPEED	10	KTS
WIND DIRECTION	270	DEGREES
CLOUD COVER	1	Ac

TABLE 6.

LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	272	16	-30	272	11	-30	280	MISG
-20	276	13	-20	273	15	-20	268	MISG
-10	271	15	-10	285	13	-10	253	MISG
0.0	272	11	0.0	277	16	0.0	261	MISG
+10	283	16	+10	270	10	+10	262	MISG

TABLE 7.

LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	254	12	-30	270	15
-20	260	13	-20	282	17
-10	270	14	-10	281	16
0.0	270	10	0.0	273	19
+10	257	13	+10	266	18

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	275	18	-30	263	20
-20	270	20	-20	262	20
-10	273	19	-10	257	21
0.0	267	20	0.0	264	20
+10	268	16	+10	264	20

PILOT BALLOON MEASURED WIND DATA

TABLE 8.

RELEASED FROM LC-33 DATE 29 May 1980 TIME 1035 MDT
 COORDINATES (WSTM) X= 486,296.83 Y= 185,251.85 H= 3986.67

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH

HEIGHTS ARE METERS AGL X OR FEET AGL .

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
sfc	273	12
30	275	13
60	277	13
90	279	14
120	277	14
150	275	15
180	275	17
210	275	20
240	277	21
270	278	22
300	273	22
330	268	23
360	271	21
390	273	19
420	268	17
450	263	15
480	265	15
510	267	14
540	266	14
570	264	13
600	264	12
630	264	10
660	249	10
690	249	10
720	248	09
750	246	09
780	244	09
810	241	09
840	235	09
870	228	09
900	234	08

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
930	240	07
960	244	07
990	247	06
1020	247	06
1050	247	06
1080	239	06
1110	230	05
1140	234	05
1170	238	05
1200	234	06
1230	230	06
1360	234	06
1410	235	09
1440	229	10
1470	222	10
1500	225	10
1530	228	10
1560	232	11
1590	236	12
1620	239	12
1650	242	12
1680	239	12
1710	236	11
1740	234	12
1770	232	12
1800	231	14
1830	230	16
1860	241	14
1890	251	12
1920	245	13
1950	238	14

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
1980	242	17
2010	245	19
2040	244	21
2070	242	22
2100	240	24
2130	238	26
2160	238	28
2190	238	29
2220	239	32
2250	240	34
2280	238	33
2310	235	33
2340	236	31
2370	236	29
2400	237	32
2430	237	35
2460	237	34
2490	237	34
2520	234	32
2550	231	30
2580	235	30
2610	238	31
2640	236	30
2670	234	28
2700	235	29
2730	235	29
2760	237	31
2790	238	32
2820	270	31
2850	302	30
2880	272	32

RELEASED FROM LC-33

DATE 29 May 1980

TIME 1035 MDT

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
2910	242	33
2930	240	33
2970	238	33
3000	239	34
3030	239	34
2060	241	34
3090	242	34
3120	237	33
3150	232	32
3180	235	34
3210	237	36
3240	235	34
3270	233	31
3300	235	35
3330	237	39
3360	235	36
3390	232	34
3420	230	33
3450	227	33
3480	230	34
3510	233	36
3540	232	36
3570	231	36
3600	235	38
3630	238	40
3660	236	39
3690	234	37
3720	235	39
3750	236	40
3780	231	38
3810	225	35
3840	227	35
3870	228	35
3900	229	36
3930	230	36
3960	227	40

[illegible][illegible]

TABLE 9. Surface Observations Taken at 1235 MDT,
29 May 1980, at LC-33, 17901A HONEST JOHN,
Missile Number 634, Round Number 669ASL.

ELEVATION	3986.67	FT/MSL
PRESSURE	877.7	MBS
TEMPERATURE	29.2	°C
RELATIVE HUMIDITY	13	%
DEW POINT	- 2.1	°C
DENSITY	1007	GM/M ³
WIND SPEED	22	KTS
WIND DIRECTION	260	DEGREES
CLOUD COVER	CLEAR	

TABLE 10. LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	274	24	-30	282	21	-30	276	22
-20	285	27	-20	281	17	-20	272	23
-10	274	24	-10	281	16	-10	263	23
0.0	279	27	0.0	285	21	0.0	272	22
+10	264	23	+10	270	21	+10	270	24

TABLE 11. LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	268	13	-30	275	23
-20	255	15	-20	272	22
-10	257	10	-10	267	16
0.0	265	20	0.0	268	27
+10	264	15	+10	263	23

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	270	25	-30	258	25
-20	253	21	-20	255	26
-10	267	26	-10	258	26
0.0	266	28	0.0	257	26
+10	261	26	+10	260	27

PILOT BALLOON MEASURED WIND DATA

TABLE 12.

RELEASED FROM LC-33 DATE 29 May 1980 TIME 1235 MDT
 COORDINATES (WSTM) X= 486,296.83 Y= 185,251.85 H= 3986.67

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH.

HEIGHTS ARE METERS AGL X OR FEET AGL .

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
sfc	260	22
30	260	23
60	260	24
90	265	25
120	270	26
150	272	30
180	274	33
210	275	35
240	275	37
270	278	36
300	280	34
330	276	33
360	276	31
390	271	30
420	270	28
450	264	29
480	258	30
510	261	29
540	263	28
570	262	28
600	261	28
630	259	26
660	257	23
690	255	21
720	253	19
750	252	19
780	250	19
810	252	18
840	253	17
870	249	15
900	244	13

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
930	245	12
960	246	10
990	251	09
1020	256	09
1050	243	10
1080	230	12
1110	229	11
1140	228	10
1170	228	10
1200	227	09
1230	224	10
1260	221	10
1290	218	12
1320	214	14
1350	220	15
1380	225	16
1410	224	17
1440	223	18
1470	223	18
1500	223	18
1530	221	17
1560	219	16
1590	217	16
1620	215	16
1650	217	17
1680	219	19
1710	223	20
1740	227	21
1770	227	22
1800	227	23
1830	228	22

HEIGHT AGL	DIRECTION DEGREES	SPEED KTS
1860	229	22
1890	229	21
1920	229	19
1950	232	21
1980	234	22
2010	237	23
2040	239	24
2070	235	24
2100	230	24
2130	233	23
2160	235	21
2190	233	23
2220	230	24
2250	233	25
2280	235	26
2310	238	26
2340	240	26
2370	272	27
2400	244	27
2430	244	30
2460	243	32
2490	243	34
2520	242	35
2550	242	35
2580	242	36
2610	243	35
2640	243	35
2700	242	35
2730	241	34
2760	239	33
2790	239	33

LC-33

DATE _____

29 May 1980

TIME.

1235 MDT

[illegible]

GEODETIC COORDINATES
 32.40045 LAT. N
 106.37055 LONG. E

SIGNIFICANT LEVEL DATA
 1500020250
 WHITE SANDS

TABLE 13.

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES	DEWPOINT CENTIGRADE	
878.3	3989.0	25.3	-3.2	15.0
863.2	4486.0	23.0	-2.0	18.0
850.0	4924.9	21.6	-3.7	18.0
764.4	7895.6	12.9	-9.5	20.0
700.0	10300.5	8.0	-14.0	18.0
597.6	14528.3	.3	-18.9	22.0
513.4	18459.7	-9.1	-22.7	32.0
500.0	19130.8	-10.7	-24.1	32.0
435.6	22569.5	-18.1	-34.5	22.0
400.0	24551.1	-21.0	-39.5	18.0
324.8	29612.4	-30.5	-47.0	18.0
300.0	31456.1	-34.4	-49.0	19.0

STATION ALTITUDE 3989.00 FEET MSL
 29 MAY 80
 ASCENSION NO. 290
 0930 HRS MDT

STATION ALTITUDE 3989.00 FEET MSL
29 MAY 60
ASCENSION NO. 290 0930 HRS MDT

UPPER AIR DATA
1500020290
WHITE SANDS

GEODETIC COORDINATES
52.40043 LAT N
106.37033 LONG W

TABLE 14.

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES	DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
3489.0	873.3	25.3	-3.2	15.0	1023.1	673.7	270.0	12.0	1.000249
4100.0	876.0	25.2	-3.1	15.1	1022.6	673.7	270.0	12.1	1.000249
4500.0	862.8	23.0	-2.6	16.0	1012.8	671.1	268.9	12.9	1.000247
5000.0	847.7	21.4	-3.8	18.1	1000.0	669.3	267.9	13.7	1.000243
5500.0	832.7	19.9	-4.8	18.4	987.9	667.0	267.0	14.6	1.000239
6100.0	816.0	18.5	-5.8	18.7	975.4	665.9	264.7	14.9	1.000235
6500.0	803.5	17.0	-6.7	19.1	963.1	664.2	260.4	13.5	1.000231
7100.0	789.3	15.5	-7.7	19.4	950.9	662.4	247.9	12.8	1.000227
7500.0	775.3	14.1	-8.7	19.7	938.9	660.7	242.1	13.1	1.000224
8100.0	761.5	12.7	-9.7	19.9	926.7	659.1	240.5	14.1	1.000220
8500.0	747.7	11.7	-10.8	19.5	913.3	657.9	244.1	16.1	1.000216
9100.0	734.1	10.6	-11.9	19.1	900.0	656.7	247.1	18.5	1.000212
9500.0	720.8	9.6	-13.0	18.7	886.9	655.5	249.5	21.6	1.000208
10100.0	707.7	8.6	-14.2	18.2	874.1	654.3	249.2	23.0	1.000204
10500.0	694.8	7.6	-15.0	18.2	861.1	653.1	247.2	25.3	1.000201
11100.0	681.9	6.7	-15.5	18.7	847.9	652.1	245.3	26.3	1.000198
11500.0	669.3	5.8	-15.9	19.1	834.9	651.0	243.4	27.2	1.000195
12100.0	656.9	4.9	-16.4	19.6	822.2	649.9	241.9	27.5	1.000191
12500.0	644.7	4.0	-16.8	20.1	809.6	648.9	240.8	27.5	1.000188
13100.0	632.7	3.1	-17.3	20.6	797.2	647.8	240.0	27.0	1.000185
13500.0	621.0	2.2	-17.8	21.0	785.0	646.7	240.1	26.0	1.000182
14100.0	609.5	1.3	-18.3	21.5	773.1	645.6	238.7	26.3	1.000179
14500.0	598.2	.3	-18.8	22.0	761.3	644.6	236.6	27.1	1.000177
15100.0	586.8	-0.8	-19.2	23.2	750.0	643.2	235.2	26.2	1.000174
15500.0	575.6	-2.0	-19.6	24.5	738.9	641.7	235.9	29.7	1.000171
16100.0	564.5	-3.2	-20.1	25.7	728.0	640.3	236.4	31.0	1.000169
16500.0	553.8	-4.4	-20.5	27.0	717.3	638.9	236.3	31.8	1.000166
17100.0	543.2	-5.6	-21.0	28.3	706.7	637.5	236.4	32.9	1.000163
17500.0	532.8	-6.8	-21.6	29.6	696.3	636.0	236.0	34.3	1.000161
18100.0	522.6	-8.0	-22.2	30.8	686.1	634.6	237.4	36.0	1.000159
18500.0	512.6	-9.2	-22.8	32.0	676.0	633.2	239.9	38.2	1.000157
19100.0	502.6	-10.4	-23.9	32.0	665.9	631.7	240.5	40.4	1.000153
19500.0	492.7	-11.5	-25.2	30.9	655.5	630.4	242.5	42.9	1.000150
20100.0	482.9	-12.6	-26.7	29.5	645.2	629.0	244.0	45.6	1.000148
20500.0	473.3	-13.6	-29.2	28.0	635.1	627.7	244.4	49.3	1.000145
21100.0	463.9	-14.7	-29.7	26.6	625.1	626.4	244.6	53.1	1.000142
21500.0	454.7	-15.8	-31.2	25.1	615.3	625.1	244.2	57.6	1.000140
22100.0	445.7	-16.9	-32.7	23.7	605.6	623.8	243.8	61.9	1.000137
22500.0	436.8	-18.0	-34.3	22.2	596.1	622.4	243.1	64.4	1.000135
23100.0	428.0	-18.8	-35.5	21.2	586.1	621.4	242.4	66.9	1.000132

STATION ALTITUDE 3989.00 FEET MSL
29 MAY 60 0930 HRS MDT
ASCL 1510.140. 290

UPPER AIR DATA
1500020290
WHITE SANDS

GEODETIC COORDINATES
32.40843 LAT N
106.37033 LONG W

TABLE 14. (continued)

GEODETIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE			KNOTS	FT/SEC	DIRECTION DEGREES(TN)	SPEED KNOTS	
2500.0	419.3	-19.7	-36.7	20.2	576.1	620.3		242.3	60.4	1.000130
2400.0	410.8	-20.5	-37.9	19.3	566.3	619.3		242.3	65.9	1.000128
2300.0	402.5	-21.3	-39.1	18.3	556.7	618.3		244.0	64.8	1.000125
2200.0	394.2	-22.2	-40.0	18.0	547.2	617.2		245.6	63.4	1.000123
2100.0	386.0	-23.1	-40.7	18.0	537.7	616.1		246.7	63.6	1.000121
2000.0	378.0	-24.0	-41.5	18.0	528.5	615.0		247.5	64.1	1.000119
1900.0	370.1	-24.9	-42.3	18.0	519.4	613.6		247.9	65.2	1.000117
1800.0	362.4	-25.8	-43.0	18.0	510.4	612.7		248.6	67.1	1.000115
1700.0	354.9	-26.7	-43.8	18.0	501.6	611.6		249.9	69.0	1.000113
1600.0	347.5	-27.6	-44.5	18.0	493.0	610.5		251.4	70.9	1.000111
1500.0	340.3	-28.5	-45.3	18.0	484.6	609.4		253.2	72.9	1.000109
1400.0	333.3	-29.4	-46.0	18.0	476.2	608.3		254.6	75.5	1.000107
1300.0	326.3	-30.3	-46.8	18.0	468.1	607.1		255.6	78.9	1.000105
1200.0	319.4	-31.3	-47.6	18.2	460.1	605.9				1.000103
1100.0	312.6	-32.4	-48.3	18.5	452.3	604.5				1.000101
1000.0	306.0	-33.4	-49.1	18.8	444.6	603.2				1.000099

STATION ALTITUDE 3989.00 FEET MSL
29 MAY 60 0930 HRS MDT
ASCENSION NO. 290

MANDATORY LEVELS
1500020290
WHITE SANDS

GEODETTIC COORDINATES
32.40043 LAT DEG
100.57033 LONG DEG

TABLE 15.

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE	PERCENT	DIRECTION DEGREES (TN)	SPEED KNOTS	
850.0	4921.	21.6	-3.7	16.	268.0	13.6	
800.0	6627.	16.6	-7.0	19.	254.0	13.2	
750.0	8411.	11.8	-10.6	20.	243.6	13.7	
700.0	10290.	8.0	-14.8	18.	240.0	24.7	
650.0	12282.	4.4	-16.6	20.	241.1	27.6	
600.0	14464.	.5	-18.8	22.	237.2	20.9	
550.0	16671.	-4.8	-20.7	27.	236.3	32.2	
500.0	19104.	-10.7	-24.1	32.	241.0	41.0	
450.0	21734.	-16.4	-32.0	24.	244.0	54.9	
400.0	24610.	-21.6	-39.5	16.	244.3	64.5	
350.0	27662.	-27.3	-44.3	16.	250.8	70.3	
300.0	31393.	-34.4	-49.8	19.			

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LONG DEG

SIGNIFICANT LEVEL DATA
1500020291
WHITE SANDS

STATION ALTITUDE 3989.00 FEET MSL
29 MAY 80
ASCENSION NO. 291

TABLE 16.

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE		REL. HUM. PERCENT
	AIR DEGREES	DEWPOINT CENTIGRADE	
877.7	29.2	-1.0	14.0
872.2	26.4	-1.4	16.0
850.0	23.6	-2.0	17.0
773.2	15.9	-9.1	17.0
700.0	8.7	-14.3	18.0
661.0	4.7	-17.0	18.0
547.0	-5.0	-24.4	20.0
530.6	-6.0	-21.6	29.0
514.4	-9.3	-23.0	30.0
500.0	-10.9	-26.0	26.0
482.6	-13.2	-29.9	23.0
466.8	-13.9	-33.0	18.0
429.0	-16.9	-36.7	16.0
400.0	-21.4	-39.6	17.0
385.6	-21.9	-40.3	17.0
318.6	-31.1	-47.5	18.0
312.2	-31.4	-47.7	18.0
300.0	-33.2	-49.3	18.0

STATION ALTITUDE 3989.00 FEET MSL
29 MAY 60
ASCENSION NO. 291

UPPER AIR DATA
1500020291
WHITE SANDS
TABLE 17.

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
3989.0	877.7	29.2	14.0	1008.6	678.2	270.0	15.0	1.000248
4000.0	877.4	29.0	14.1	1009.0	678.0	270.0	15.0	1.000248
4500.0	862.3	25.2	16.4	1004.7	673.6	268.5	15.8	1.000246
5000.0	847.4	23.3	17.0	993.4	671.5	267.2	16.6	1.000242
5500.0	832.5	21.9	17.0	980.9	669.9	266.0	17.4	1.000238
6000.0	817.9	20.5	17.0	968.5	668.2	264.9	18.2	1.000234
6500.0	803.5	19.0	17.0	956.4	666.5	262.6	18.1	1.000230
7000.0	789.4	17.6	17.0	944.3	664.8	257.6	16.6	1.000226
7500.0	775.6	16.1	17.0	932.5	663.1	252.1	15.2	1.000222
8000.0	761.6	14.8	17.2	920.1	661.6	246.6	14.5	1.000218
8500.0	747.9	13.5	17.3	907.7	660.0	240.7	14.1	1.000215
9000.0	734.5	12.2	17.5	895.6	658.5	234.5	13.8	1.000211
9500.0	721.2	10.9	17.7	883.0	656.9	231.1	14.0	1.000208
10000.0	708.2	9.5	17.9	871.8	655.4	229.2	14.5	1.000204
10500.0	695.4	8.2	18.0	860.0	653.9	227.4	15.1	1.000201
11000.0	682.6	6.9	18.0	848.1	652.3	226.7	16.6	1.000198
11500.0	670.1	5.6	18.0	836.5	650.8	232.0	19.3	1.000194
12000.0	657.7	4.4	18.1	824.6	649.4	234.6	21.9	1.000191
12500.0	645.3	3.5	18.3	812.0	648.2	238.0	24.5	1.000188
13000.0	633.1	2.5	18.5	799.5	647.1	241.4	27.1	1.000185
13500.0	621.2	1.5	18.7	787.3	645.9	243.6	29.7	1.000182
14000.0	609.5	.5	18.9	775.2	644.7	243.8	31.1	1.000179
14500.0	598.0	-0.4	19.1	763.4	643.6	243.7	32.6	1.000176
15000.0	586.8	-1.4	19.3	751.7	642.4	242.6	34.8	1.000173
15500.0	575.7	-2.4	19.5	740.2	641.3	242.1	36.9	1.000170
16000.0	564.9	-3.4	19.7	728.9	640.1	242.1	38.1	1.000167
16500.0	554.3	-4.3	19.9	717.8	638.9	242.0	39.4	1.000165
17000.0	543.7	-5.4	20.8	706.9	637.7	241.2	40.2	1.000162
17500.0	533.3	-6.5	27.5	696.2	636.4	240.4	40.9	1.000161
18000.0	523.0	-8.0	29.5	686.5	634.6	240.3	41.1	1.000159
18500.0	512.8	-9.5	29.6	677.1	632.8	240.4	41.0	1.000158
19000.0	502.8	-10.6	26.8	666.8	631.4	240.9	41.9	1.000153
19500.0	492.9	-11.8	27.9	656.8	629.9	241.5	43.2	1.000150
20000.0	483.2	-13.1	23.1	647.1	628.3	243.4	45.8	1.000147
20500.0	473.7	-13.6	20.2	635.5	627.7	245.6	49.0	1.000144
21000.0	464.3	-14.1	17.9	624.2	627.1	246.5	51.7	1.000141
21500.0	455.0	-14.8	17.4	613.4	626.3	246.6	54.1	1.000139
22000.0	446.0	-15.5	16.9	602.9	625.4	246.5	56.3	1.000136
22500.0	437.1	-16.2	16.4	592.5	624.5	245.0	58.3	1.000134
23000.0	428.4	-17.0	16.0	582.4	623.6	243.0	60.1	1.000131

STATION ALTITUDE 3489.00 FEET MSL
29 MAY 60 1235 HRS MDT
ASCENSION NO. 291

UPPER AIR DATA
1500020291
WHITE SANDS

TABLE 17 (continued)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIR, CTIO DEGREES (TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
23500.0	419.7	-18.3	16.3	573.6	622.0	244.0	61.3	1.000129
24000.0	411.2	-19.6	16.6	564.9	620.4	243.3	62.5	1.000127
24500.0	402.9	-20.9	16.9	556.4	618.8	243.9	63.6	1.000125
25000.0	394.7	-21.6	17.0	546.5	616.0	244.6	64.9	1.000123
25500.0	386.7	-21.9	17.0	535.9	617.0	246.9	66.8	1.000120
26000.0	378.6	-22.8	17.1	526.7	616.5	249.0	68.8	1.000118
26500.0	370.8	-23.8	17.2	517.9	615.2	249.9	68.9	1.000116
27000.0	363.0	-24.8	17.3	509.2	614.0	250.0	68.9	1.000114
27500.0	355.5	-25.8	17.4	500.6	612.7	253.3	69.3	1.000112
28000.0	348.1	-26.8	17.5	492.2	611.5	255.9	69.9	1.000110
28500.0	340.9	-27.8	17.6	484.0	610.2	257.1	71.8	1.000108
29000.0	333.8	-28.9	17.8	475.9	608.9	257.9	74.1	1.000107
29500.0	326.8	-29.9	17.9	467.9	607.7	257.7	77.3	1.000105
30000.0	320.0	-30.9	18.0	460.1	606.4	257.0	81.0	1.000103
30500.0	313.3	-31.4	18.0	451.3	605.8			1.000101
31000.0	306.6	-32.2	18.0	443.3	604.7			1.000099
31500.0	300.1	-33.2	18.0	435.6	603.5			1.000097

STATION ALTITUDE 3989.00 FEET MSL
29 MAY 80
ASCENSION NO. 291

MANDATORY LEVELS
1500020291
WHITE SANDS

GEODETIC COORDINATES
32.40043 LAT DEG
106.37033 LONG DEG

TABLE 18.

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT DEGREE	PERCENT		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	4909.	23.6	-2.8	17.		267.4	16.4
800.0	6627.	18.7	-6.8	17.		261.5	17.7
750.0	8424.	13.7	-10.7	17.		241.6	14.1
700.0	10311.	8.7	-14.3	16.		228.0	14.9
650.0	12302.	3.6	-18.1	18.		236.5	23.5
600.0	14419.	-3	-21.0	19.		243.8	32.3
550.0	16683.	-4.7	-24.2	20.		241.6	39.7
500.0	19115.	-10.9	-26.6	20.		241.1	42.3
450.0	21746.	-15.2	-34.6	17.		246.9	55.3
400.0	24636.	-21.4	-39.8	17.		244.1	64.0
350.0	27840.	-26.6	-43.9	18.		255.3	69.7
300.0	31442.	-33.2	-49.3	18.			

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